

CLAIMS

I Claim:

1. An arrowhead comprising:
 - a body extending from a forward end to an opposing rearward end;
 - a first cutting edge and a second cutting edge disposed at the forward end of the body; and
 - a first facet extending between the first cutting edge and the second cutting edge, the first facet comprising:
 - a primary facet portion at least partially disposed between the first cutting edge and the second cutting edge; and
 - a first bevel extending from the first cutting edge to the primary facet portion along at least a portion of the length of the first cutting edge, the first bevel and primary facet portion intersecting at a bevel boundary forming a corner, at least a portion of the first bevel being concave.
2. An arrowhead as recited in claim 1, wherein the bevel boundary forms an inside corner.
3. An arrowhead as recited in claim 1, wherein the bevel boundary forms an outside corner.
4. An arrowhead as recited in claim 1, wherein the bevel boundary forms a rounded corner.
5. An arrowhead as recited in claim 1, wherein at least a portion of the primary facet portion is concave.

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6. An arrowhead as recited in claim 1, wherein at least a portion of the primary facet portion is convex.

7. An arrowhead as recited in claim 1, wherein at least a portion of the primary facet portion is substantially flat.

8. An arrowhead as recited in claim 1, wherein the first facet further comprises a second bevel extending from the second cutting edge to the primary facet portion along at least a portion of the length of the second cutting edge.

9. An arrowhead as recited in claim 1, wherein the first bevel substantially extends along the full length of the first cutting edge.

10. An arrowhead as recited in claim 1, wherein the first cutting edge and the second cutting edge intersect at a forward apex point of the body.

11. An arrowhead as recited in claim 1, wherein the bevel boundary substantially follows or parallels the contour of the first cutting edge for at least a portion of the length of the first cutting edge.

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12. An arrowhead as recited in claim 1, wherein the bevel boundary does not substantially follow or parallel the contour of the first cutting edge for at least a portion of the length of the first cutting edge.

13. An arrowhead as recited in claim 1, further comprising:

a third cutting edge disposed at the forward end of the body; and

a second facet extending between the second cutting edge and the third cutting edge.

14. An arrowhead as recited in claim 1, wherein the body comprises a tip piece attached at the forward end thereof, the tip piece having the first and second cutting edges, facet and bevel disposed thereon.

15. An arrowhead as recited in claim 1, wherein the primary facet portion of the first facet is formed at least in part by a first manufacturing operation, and the first bevel is formed at least in part by a second different manufacturing operation.

16. An arrowhead as recited in claim 15, wherein at least a section of the primary facet portion of the first facet and at least a section of the first bevel are formed by material removing tools, the material removing tool forming at least a section of the primary facet portion of the first facet being a different tool than the material removing tool forming at least a section of first bevel.

17. An arrowhead as recited in claim 16, wherein the material removing tools forming at least sections of the primary facet portion of the first facet and the first bevel each have rotation about an axis.

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18. An arrowhead comprising:

- a body extending from a forward end to an opposing rearward end;
- a first cutting edge and a second cutting edge disposed at the forward end of the body;
- a first facet extending between the first cutting edge and the second cutting edge, the first facet comprising:
 - a first primary facet portion at least partially disposed between the first cutting edge and the second cutting edge, at least a portion of the first primary facet portion being convex or substantially flat; and
 - a first bevel extending from the first cutting edge to the first primary facet portion along at least a portion of the length of the first cutting edge, at least a portion of the first bevel being concave or substantially flat.

19. An arrowhead as recited in claim 18, wherein the first bevel and the first primary facet portion intersect at a bevel boundary forming a corner.

20. An arrowhead as recited in claim 19, wherein the bevel boundary forms an inside corner or an outside corner.

21. An arrowhead as recited in claim 19, wherein the bevel boundary forms a rounded corner.

22. An arrowhead as recited in claim 18, wherein the first primary facet portion has a substantially V-shaped configuration.

23. An arrowhead as recited in claim 18, further comprising:

- a third cutting edge disposed at the forward end of the body; and
- a second facet extending between the second cutting edge and the third cutting edge.

24. An arrowhead as recited in claim 23, further comprising a third facet extending

between the first cutting edge and the third cutting edge, the third facet including:

- a second primary facet portion at least partially disposed between the first cutting edge and the third cutting edge; and
- a second bevel extending from the first cutting edge to the second primary facet portion along at least a portion of the length of the first cutting edge.

25. An arrowhead as recited in claim 18, wherein the first cutting edge and the second cutting edge intersect at a forward apex point of the body.

26. An arrowhead as recited in claim 18, wherein the bevel boundary substantially follows or parallels the contour of the first cutting edge for at least a portion of the length of the first cutting edge.

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27. An arrowhead as recited in claim 18, wherein the bevel boundary does not substantially follow or parallel the contour of the first cutting edge for at least a portion of the length of the first cutting edge.

28. An arrowhead as recited in claim 18, wherein the primary facet portion of the first facet is formed at least in part by a first manufacturing operation, and the first bevel is formed at least in part by a second different manufacturing operation.

29. An arrowhead as recited in claim 18, wherein the first cutting edge is substantially linear.

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30. An arrowhead comprising:

a body having a central longitudinal axis extending from a forward end to an opposing rearward end;

a first cutting edge disposed at the forward end of the body;

a first facet extending from the first cutting edge on a first side of the first cutting edge; and

a second facet extending from the first cutting edge on a second side of the first cutting edge,

the first facet comprising:

a first primary facet portion at least partially disposed between the first cutting edge and the second cutting edge; and

a first bevel extending from the first cutting edge to the first primary facet portion along at least a portion of the length of the first cutting edge, the first bevel and first primary facet portion intersecting at a bevel boundary, the first bevel being configured such that when viewed in a plane extending through the first bevel perpendicular to the central longitudinal axis of the body, the plane intersecting the first cutting edge at an apex, the following angles are formed:

a first inside angle extending from the apex to points intersecting the first bevel and the second facet at a first radius from the apex; and

a second inside angle extending from the apex to points intersecting the first primary facet portion and second facet at a second radius from the apex, the first inside angle being smaller than the second inside angle.

31. An arrowhead as recited in claim 30, wherein the bevel boundary forms a corner.

32. An arrowhead as recited in claim 31, wherein the corner is an inside corner or an outside corner.

33. An arrowhead as recited in claim 31, wherein the corner is rounded.

34. An arrowhead as recited in claim 30, wherein at least a portion of the first primary facet portion is concave.

35. An arrowhead as recited in claim 30, wherein at least a portion of the first primary facet portion is convex.

36. An arrowhead as recited in claim 30, wherein at least a portion of the first primary facet portion is substantially flat.

37. An arrowhead as recited in claim 30, wherein at least a portion of the first bevel is concave or substantially flat.

38. An arrowhead as recited in claim 30, further comprising a second cutting edge and a third cutting edge disposed at the forward end of the body, the second facet extending between the first cutting edge and the third cutting edge.

39. An arrowhead as recited in claim 38, wherein the second facet includes:

a second primary facet portion at least partially disposed between the first cutting edge and the third cutting edge; and

a second bevel extending from the first cutting edge to the second primary facet portion along at least a portion of the length of the first cutting edge.

40. An arrowhead as recited in claim 38, further comprising a third facet extending between the second cutting edge and the third cutting edge, the third facet including:

a third primary facet portion at least partially disposed between the second cutting edge and the third cutting edge; and

a third bevel extending from the second cutting edge to the third primary facet portion along at least a portion of the length of the second cutting edge.

41. An arrowhead as recited in claim 30, wherein the first, second and third cutting edges intersect at a forward apex point of the body.

42. An arrowhead as recited in claim 30, wherein the body comprises a tip piece attached at the forward end thereof, the tip piece having the cutting edges, facets and bevels disposed thereon.

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43. An arrowhead comprising:

- a body extending from a forward end to an opposing rearward end;
- a first cutting edge and a second cutting edge disposed at the forward end of the body, the first cutting edge having a forward most terminus and a rearward most terminus, and the second cutting edge having a forward most terminus and a rearward most terminus; and

- a facet extending between the first cutting edge and the second cutting edge, the

- facet comprising:

- a primary facet portion at least partially disposed between the first cutting edge and the second cutting edge; and

- a first bevel extending from the first cutting edge to the primary facet portion along at least a portion of the length of the first cutting edge, the first bevel having an exterior surface, the facet being configured such that the entire exterior surface of the first bevel does not lie in a plane intersecting the forward most and the rearward most terminuses of both the first and second cutting edges.

44. An arrowhead as recited in claim 43, further comprising a plurality of said facets.

45. An arrowhead as recited in claim 43, further comprising a second bevel extending from the second cutting edge to the primary facet portion along at least a portion of the length of the second cutting edge, the second bevel having an exterior surface, the facet being configured such that the entire exterior surface of the bevel does not lie in a plane intersecting the forward most and

rearward most terminuses of both the first and second cutting edges.

46. An arrowhead as recited in claim 45, further comprising a plurality of said facets.

47. An arrowhead as recited in claim 43, wherein the first and second cutting edges are linear.

48. An arrowhead as recited in claim 43, further comprising:

a central longitudinal axis; and

a second facet extending from the first cutting edge on a side of the first cutting edge opposite the first facet, the first bevel being configured such that when viewed in a plane extending through the first bevel perpendicular to the central longitudinal axis of the body, the plane intersecting the first cutting edge at an apex, the following angles are formed:

a first inside angle extending from the apex to points intersecting the first bevel

and the second facet at a first radius from the apex; and

a second inside angle extending from the apex to points intersecting the first primary facet portion and second facet at a second radius from the apex, the first inside angle being smaller than the second inside angle.

49. An arrowhead as recited in claim 43, wherein the primary facet portion of the first facet is formed at least in part by a first manufacturing operation, and the first bevel is formed at least in part by a second different manufacturing operation.

50. An arrowhead as recited in claim 49, wherein at least a section of the primary facet portion of the first facet and at least a section of the first bevel are formed by material removing tools, the material removing tool forming at least a section of the primary facet portion of the first facet being a different tool than the material removing tool forming at least a section of first bevel.

51. An arrowhead as recited in claim 50, wherein the material removing tools forming at least sections of the primary facet portion of the first facet and the first bevel each have rotation about at axis.

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52. An arrowhead comprising:

a body extending from a forward end to an opposing rearward end;

a first cutting edge and a second cutting edge disposed at the forward end of the body, the first cutting edge having a forward most terminus and a rearward most terminus, and the second cutting edge having a forward most terminus and a rearward most terminus; and

a facet extending between the first cutting edge and the second cutting edge, the

facet comprising:

a primary facet portion at least partially disposed between the first cutting edge and the second cutting edge; and

a first bevel extending from the first cutting edge to the primary facet portion along at least a portion of the length of the first cutting edge, the first bevel having an exterior surface, the facet being configured such that at least a portion of the exterior surface of the first bevel displaced a distance away from the first cutting edge, does not lie in a plane intersecting the forward most and the rearward most terminuses of both the first and second cutting edges.

53. An arrowhead as recited in claim 52, further comprising a plurality of said facets.

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54. An arrowhead as recited in claim 52, further comprising a second bevel extending from the second cutting edge to the primary facet portion along at least a portion of the length of the second cutting edge, the second bevel having an exterior surface, the facet being configured such that the entire exterior surface of the bevel does not lie in a plane intersecting the forward most and rearward most terminuses of both the first and second cutting edges.

55. An arrowhead as recited in claim 54, further comprising a plurality of said facets.

56. An arrowhead as recited in claim 52, wherein the first and second cutting edges are linear.

57. An arrowhead as recited in claim 52, wherein the primary facet portion of the first facet is formed at least in part by a first manufacturing operation, and the first bevel is formed at least in part by a second different manufacturing operation.

58. An arrowhead as recited in claim 57, wherein at least a section of the primary facet portion of the first facet and at least a section of the first bevel are formed by material removing tools, the material removing tool forming at least a section of the primary facet portion of the first facet being a different tool than the material removing tool forming at least a section of first bevel.

59. An arrowhead as recited in claim 58, wherein the material removing tools forming at least sections of the primary facet portion of the first facet and the first bevel each have rotation about an axis.

60. An arrowhead as recited in claim 52, further comprising:

a central longitudinal axis; and

a second facet extending from the first cutting edge on a side of the first cutting edge opposite the first facet, the first bevel being configured such that when viewed in a plane extending through the first bevel perpendicular to the central longitudinal axis of the body, the plane intersecting the first cutting edge at an apex, the following angles are formed:

a first inside angle extending from the apex to points intersecting the first bevel

and the second facet at a first radius from the apex; and

a second inside angle extending from the apex to points intersecting the first primary facet portion and second facet at a second radius from the apex, the first inside angle being smaller than the second inside angle.

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